



Features

- 50MHz Switching Rates
- 700ps Maximum Differential Skew
- 1.5ns Maximum Propagation Delay
- $\pm 350\text{mV}$ Differential Signaling
- Pinout Simplifies PCB layout
- Low Power Dissipation (18mW@3.3VTypical)
- DFN8/SOT23-5 Package
- 3.3V/2.5V operating supply
- -40°C to 125°C ambient operating temperature
- AEC-Q100 qualified, Automotive Grade 1 support; PPAP capable, and manufactured in IATF 16949 certified facilities

Applications

- Multifunction Printers
- LVCMOS to LVDS Translation
- Building and Factory Automation Grid Infrastructure

Descriptions

The RS83011Q is a 1-to-1 LVCOMS/LVTTL to LVDS Differential Translator and a member of the family of High-Performance Clock Solutions. The differential output is highly flexible and can match the universal differential input types. The small package makes this device ideal for use in applications with limited board space.

Order Information

Part Number	Package	Description
RS83011QZAE	DFN8	2mmx2mm
RS83011QTAE	SOT23-5	2.92mmx1.6mm

Notes

[1] E = Pb-free and Green



Pin Configurations

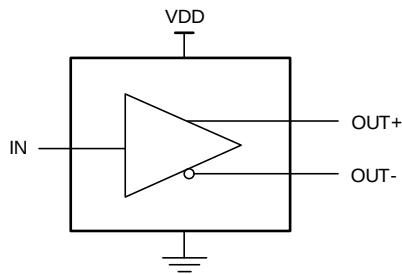


Figure1. Block Diagram

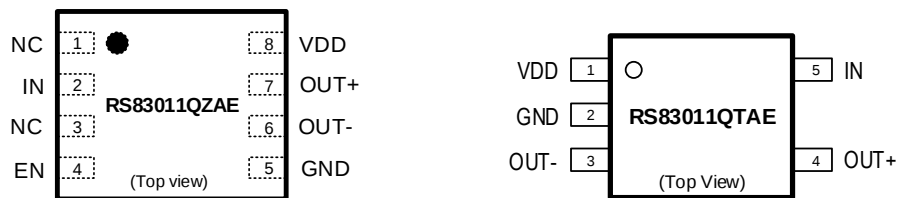


Figure2. PinDefinition

Pin Description

DNF8	SOT23-5	Pin Name	Description
2	5	IN	LVTTL/LVCMOS driver input pins
7	4	OUT+	Non-inverting driver output pin
6	3	OUT-	Inverting driver output pin
5	2	GND	Ground pin
8	1	VDD	Power supply pin, +3.3±0.3V
4		EN	Active High Output Enable. Outputs will be Low Level when OE is low
1,3		NC	Not connected



Absolute Maximum Ratings

PARAMETER	MIN	MAX	UNIT
Supply Voltage (VDD)	-0.3	4	V
LVCMOS input voltage (TTL IN)	-0.3	3.6	V
LVDS output voltage (OUT $\pm$)	-0.3	3.9	V
Thermal Resistance (θ_{JA})		138.5	°C/W
Storage Temperature	-65	150	°C
Maximum Junction Temperature		150	°C

Note:

1. "Absolute Maximum Ratings" are those values beyond which the safety of the device cannot be specified. They are not meant to imply that the devices should be operated at these limits.

Recommended Operating Conditions

PARAMETER	MIN	TYP	MAX	UNIT
Supply Voltage (VDD)	3	3.3	3.6	V
	2.375	2.5	2.625	V
Temperature (T _A)	-40	25	125	°C

ESD Ratings

The following ESD information is provided for handling of ESD-sensitive devices in an ESD protected area only.

PARAMETER		VALUE	UNIT
ESD and LU	HBM(1.5k Ω ,100pF)	2500	V
	CDM(0 Ω ,0pF)	2000	V
	Latch Up	200	mA



Electrical Characteristics

Over Supply Voltage and Operating Temperature ranges, unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
$ V_{OD} $	Output Differential Voltage	$R_L=100\Omega$ (Figure 3)	250	350	450	mV
V_{OS}	VOD Magnitude Change	$R_L=100\Omega$ (Figure 3)	1.125	1.25	1.375	V
I_{OS}	Output Short Circuit Current	$V_{OUT+}=0$ and $V_{OUT-}=0$		-4.5	-10	mA
I_{OSD}	Differential Output Short Circuit Current	$V_{OD}=0$		-4.4	-8	mA
C_{OUT}	Output Capacitance			3		pF
V_{IH}	Input High Voltage		2		V_{DD}	V
V_{IL}	Input Low Voltage		GND		0.8	V
I_{IH}	Input High Current	$V_{IN}=3.3V$ or $2.4V$		0	± 10	μA
I_{IL}	Input Low Current	$V_{IN}=0$ or $0.5V$		0	± 10	μA
C_{IN}	Input Capacitance			3		pF
I_{DD}	Power Supply Current	No Load		4.5	7	mA
		$R_L=100\Omega$		5.3	7	mA

Note:

1. Current into device pins is defined as positive. Current out of device pins is defined as negative.
2. All typicals are given for: $V_{DD}=3.3V$ and $T_A=25^\circ C$.

Switching Characteristics

Over Supply Voltage and Operating Temperature ranges, unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
t_{PHLD}	Differential Propagation Delay High to Low	$R_L=100\Omega$ (Figure 4 and Figure 5)	0.3	0.8	1.5	ns
t_{PLHD}	Differential Propagation Delay Low to High		0.3	0.7	1.5	ns
t_{SKD1}	Differential Pulse Skew $ t_{PHLD} - t_{PLHD} $		0	0.1	0.7	ns
t_{TLH}	Transition Low to High Time		0.2	0.5	1	ns
t_{THL}	Transition High to Low Time		0.2	0.5	1	ns
f_{MAX}	Maximum Operating Frequency			50		MHz

Note:

1. Generator waveform for all tests unless otherwise specified: $f=1MHz$, $Z_o=50\Omega$, $t_r \leq 1ns$, $t_f \leq 1ns$ (10%-90%).
2. f_{MAX} generator input conditions: $t_r=t_f < 1ns$ (0%-100%), 50%, 0 to 3V. Output criteria: duty cycle = 45%-55%, $V_{OD} > 250mV$.
3. Figure 3 shows the test circuits used for $|V_{OD}|$ and V_{OS} tests, and Figure 4 shows the test circuits used for switching characteristics.



Parameter Measurement Information

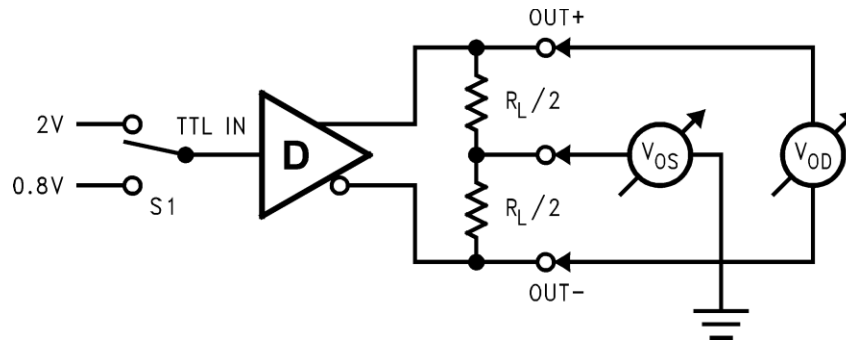


Figure 3. Differential Driver DC Test Circuit

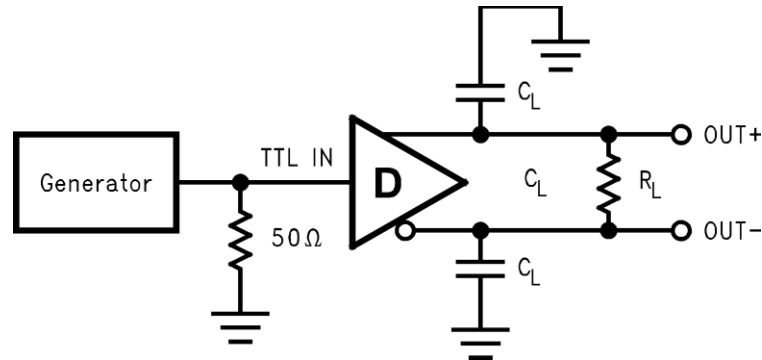


Figure 4. Differential Driver Propagation Delay and Transition Time Test Circuit

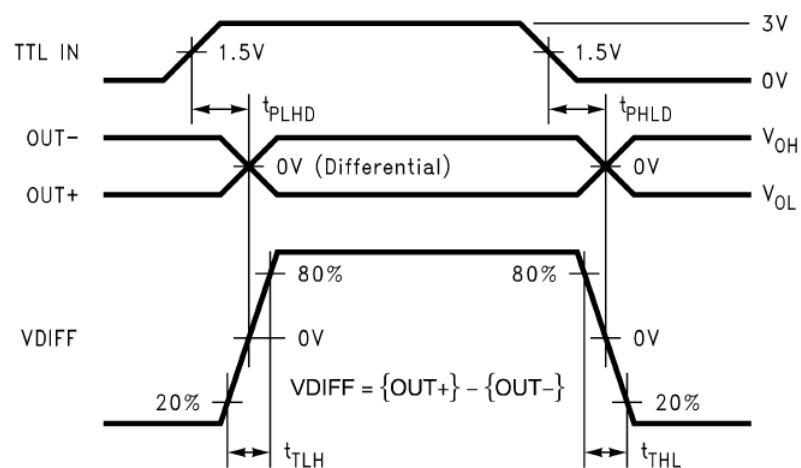
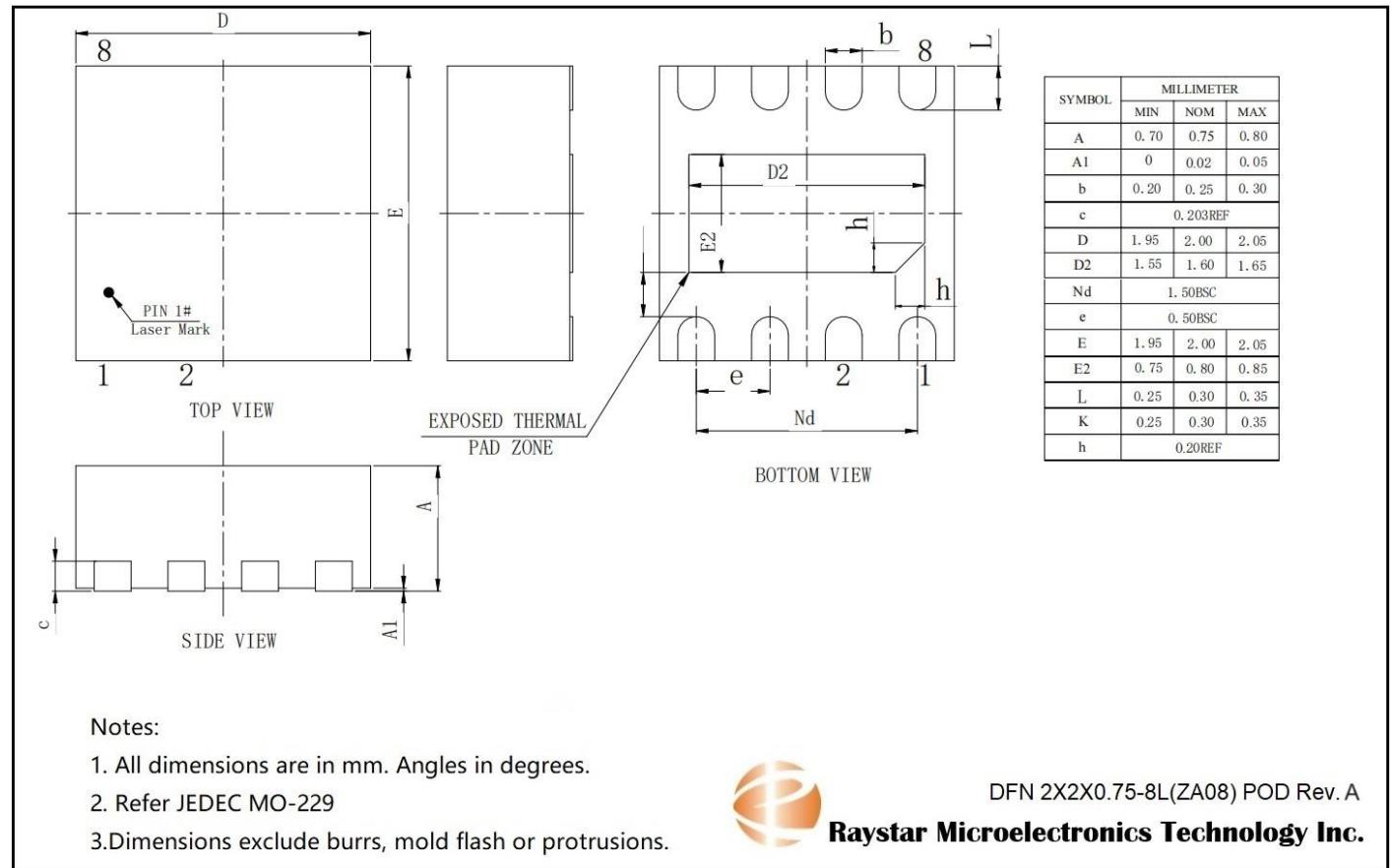


Figure 5. Differential Driver Propagation Delay and Transition Time Waveforms



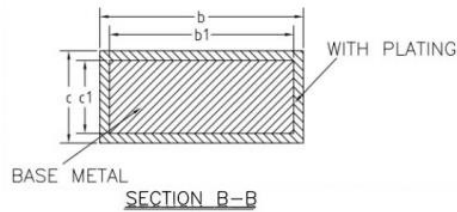
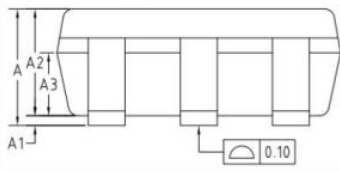
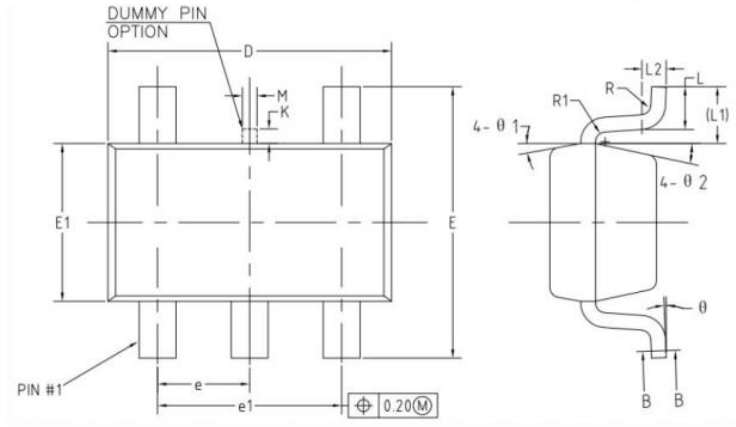
Package Information

DFN8





SOT23-5



COMMON DIMENSIONS
(UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	NOM	MAX
A	—	—	1.25
A1	0	—	0.15
A2	1.00	1.10	1.20
A3	0.60	0.65	0.70
b	0.34	—	0.45
b1	0.34	0.38	0.41
c	0.12	—	0.20
c1	0.12	0.15	0.16
D	2.826	2.926	3.026
E	2.60	2.80	3.00
E1	1.526	1.626	1.700
e	0.90	0.95	1.00
e1	1.80	1.90	2.00
K	0	—	0.20
L	0.30	0.40	0.60
L1	0.59REF		
L2	0.25BSC		
M	0.10	0.15	0.20
R	0.05	—	0.20
R1	0.05	—	0.20
θ	0°	—	8°
θ 1	8°	10°	12°
θ 2	10°	12°	14°

Notes:

1. All dimensions are in mm. Angles are in degrees.
2. Refer to MO-178.
3. dimensions exclude burrs, mold flash or protrusions.





Revision History

Revision	Description	Date
V0.91	Preliminary Release	2025/07/22
V0.92	Add SOT23-5 package	2025/07/24
V0.93	Modify page header description	2025/07/31
V0.94	Modify the Supply Voltage (VDD) range	2025/08/02
V1.0	Initial release	2025/12/24